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ABSTRACT

Cloze tests assess the readability of a book for students in a far more personal way than formulas or standardized tests of reading comprehension. The cloze procedure reflects the total language abilities in the following ways: familiarity with sentence structure, context clues, and vocabulary, and the ability to draw inferences from written prose. Cloze tests can be used to identify students' retarded or superior reading ability, for research and diagnostic purposes, or in ways which vary according to what is to be measured. To construct a cloze test of readability, (1) select two representative passages from near the beginning of the book, (2) delete words to a regular pattern, and (3) delete a proportion of nouns approximately equal to one-fifth of the total number of nouns in the passage. To administer and score the test, have the students fill in each blank with the exact missing word, count correct responses, and convert correct responses to a percentage. The cloze procedure is particularly helpful at the high school level. All new entrants to the school can be given a cloze test, using the social studies text as their first topic. The scores from this test can give content area teachers better insight into the readers' understanding and ability, and into what will or will not be suitable instructional material for a specific purpose. (HOD)

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READABILITY

CLOZE PROCEDURES FOR ASSESSING HIGH SCHOOL TEXT AND RESOURCE BOOKS

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"In the broadest sense, readability is the sum total (including interactions) of all those elements within a given piece of printed material that affects the success which a group of readers have with it. The success is the extent to which they understand it, read it at optimum speed and find it interesting." (Dale-Chall, 1948)

In relating the printed material to the success with which it is read, this quotation stresses important aspects of the reading process: comprehension, fluency and interest. When discussing readability, we must never lose sight of what is involved in the act of reading. The reader, as well as the printed material, must be considered. What we are really talking about, then, is matching children and books in the realms of interest and understanding, and the success which results from this interaction. Only when a child reads with comprehension, fluency and interest can we honestly say that that book is readable for that child. Readability should be of primary concern to writers, publishers, teachers and librarians.

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Let us think briefly of what happens when we read, and try to understand what makes a certain book readable for a certain reader. It is necessary to understand words and phrases, and relate ideas to one's own experiences: to cope with the perceptual aspects of decoding print and read with ease: and to be motivated to read through one's own interest in the topic. All these are necessary for comprehension.

CLOZE PRODEDURE

The Cloze Procedure is a most useful method for rating text and resource books, where there is a specialised vocabulary and there are difficult concepts to master. Children who take a Cloze Test are assessing the readability of a book for them in a far more personal way than can be achieved by formulae, or standardized tests of reading comprehension. Their teacher can learn from their responses not only much about their reading ability, but also about their attitudes in general.

When a class begins a new topic involving the use of a specific book for instruction, a Standard Cloze Test for that book may be administered. The response to the Cloze Test reflects the total language abilities in the following ways:-

* familiarity with sentence structure
* familiarity with context clues
* familiarity with vocabulary used by the author
* ability to draw inferences from written prose

Cloze Tests are a valid and consistent index of reading comprehension, and can be used to predict difficulty for a wide range of reading abilities. There are three ways in which Cloze Procedure can be used:-

1. STANDARDIZED CLOZE TESTS:

   e.g. GAP (1965) and GAPADOL (1972)

   Used to identify students' retarded or superior reading ability.

2. STANDARD INFORMAL CLOZE TESTS:

   For research and diagnostic purposes, such as predicting readability. Blanks and structure of deletions internally consistent. (every "nth" word deleted)

   (Referred to by Pikulski & Tobin as "random deletion cloze tests", p48)

3. CONTROLLED CLOZE TESTS:

   Constructed according to what is to be measured. Deletions may be structural or lexical. Nature and frequency of blanks may be altered. Clues may be given.

   (Referred to by Pikulski & Tobin as "rational deletion cloze tests",p54)

The Standard Cloze Test of Readability provides an approximation of students' ability to read selected material, but it is valid ONLY if constructed, administered and scored according to precise rules. It should not replace a teacher's carefully considered professional judgement of a student's reading ability, any more than any other test should do. Nor should it be confused with a Cloze Test of Reading Comprehension in general. (For that purpose use a Controlled Cloze Test.)

Some recent studies question the validity of cloze tests. For that reason I will outline the events which have led up to the construction of these particular tests that assess readability.

Bormuth (1969) took 330 prose passages from a great range of material: fiction, non-fiction, technical, non-technical: low elementary school to university level: and rated them for difficulty by the cloze procedure. He compared those difficulty levels with 70 different measures of readability in a computer analysis. The best measures of readability turned out to be word length per independent clause, and various measures of vocabulary load. None was higher than 0.75 but he had not then heard of Dr. Warwick Elley's Noun Frequency method. (Elley, 1969)

Elley calculated the difficulty level of each of Bormuth's passages which contained at least 20 nouns, using the Noun Frequency method, and correlated these figures with the different levels as estimated by the rotating cloze test with the following results:-

Table 1

Correlations between Cloze Test Difficulty Levels and Noun Frequency Levels

Subject	No. of Passages	Correlation
Literature	16	0.89
Biology	17	0.90
Current News	18	0.82
Geography	12	0.92

This gives clear evidence of the validity of both methods of assessing readability. While the noun frequency method assesses vocabulary load alone, the cloze procedure measures the student's familiarity with the relationships contained amongst words. Reading comprehension is a complex

process reflecting large components of familiarity with both words and language structures.

* * * *

As a Reading Specialist working mainly in the content areas of a High School with pupils aged from about 13 to 17 years, what I needed was a short but valid and reliable test to indicate students' abilities to read selected materials. What I have developed over the past seven years is a standard informal cloze test, which takes two extracts from a book which the whole class is going to use. The test can be set out on one page, and the results indicate three levels of reading ability within that class: Independent, Instructional and Frustration. An example of a test, taken from the book "Atoll", a Social Studies Resource book used by 13 year-olds, is shown as Appendix 1. This test takes 5 minutes to explain to the students, 20-25 minutes for them to complete, and not too long for the teacher to mark. But as I have said, it will not be valid or reliable as an indicator of reading ability <u>unless</u> constructed according to precise rules.

Here, then, is how to construct a Cloze Test of Readability:

1. * Select two representative passages from near the beginning of the book. Allow for deletion of 25 words in each passage with one sentence unmutilated at the beginning and at the end of the passage.
2. ** Delete words to a regular pattern: no less than every 5th word and no more than every 10th word. Every 7th

word is recommended. Replace deleted words with blanks of uniform length (3cm for elite type). Number each space to facilitate marking. Print in the first two replacement words in the first passage as an example of the response required.

3.***The proportion of nouns deleted must be approximately equal to one fifth of the total number of nouns in the passage. e.g. 20 nouns in the passage:4 (plus or minus 1) deleted. (Elley, 1977) Do not delete proper nouns or numerals unless they can be deduced from context. Contracted or hyphenated words count as one word. Retain all punctuation.

* * * *

*Selecting extracts

As the Cloze Test assesses, in part, the student's ability to infer from context the words which have been deleted, a selection in which the context does not logically imply particular words, should not be used. The material should present key ideas and concepts, not easier examples of key ideas. (Burron, 1974)

**Word Deletion

The ideal is to delete every 7th word. This allows for sufficient context clues without involving too much reading, and it also means that the test can be set out on one page. In text books, however, the 7th word deletion may be difficult and other regular rates of deletion are acceptable, as long as no less than every 5th and no more

than every 10th word. Research indicates that the word deletion rate within those limits does not affect results or the reliability of the test.

***Proportion of Nouns Deleted

This is very important because it affects the validity of the test. It also makes a difference to the difficulty level of a passage if mostly prepositions, pronouns, verbs and conjunctions are to be replaced rather than nouns, because nouns are usually more difficult to replace correctly. (Elley, 1976) Count the number of nouns in the whole passage, but do not include proper nouns. Appendix 2 shows the first extract from the test paper, with the nouns underlined. (49) When deleting, you do not count proper nouns, hence you will sometimes have more than a regular number of words between deletions.

Administering and Scoring

1. Students fill in each blank with exact missing word (one only) which has been deleted. It may be a short word or a long word. They should read the passage through before attempting replacement. Allow sufficient time to complete, but if they have not finished in about 20 minutes, you can be sure they are finding the reading difficult and more time is not likely to alter the final result. Be sure to use a Practice Sheet (orally) if they have not done a Cloze Test before.(Appendix 3 shows sample Practice sheet.)
2. Count correct responses, including the first two which have been used as an example. Spelling mistakes are not

wrong answers. Synonyms, however, are not acceptable. The reason for this is outlined later.

3. Convert correct responses to a percentage.

Compare accuracy with the following criteria:-

Independent Reading Level:	60% and above
Instructional Reading Level:	40% - 58%
Frustration Reading Level:	Below 40%

(Pack & Silvaroli, 1973)

Independent Reading Level: Means that the student will be able to comprehend the material without assistance.

Instructional Reading Level: Means that the student will need assistance to get meaning from the material. The Selective Reading Guide is recommended: e.g. "Read to find out..."what you want the student to get from the reading. (Cunningham,D: Journal of Reading, Vol.18, 1975)

Frustration Reading Level: It would be better to find an easier book. If this is not possible, individual assistance should be given and the content carefully explained. Adjust any written work to the level of the student's reading ability.

* * * *

My choice of criteria for converting cloze scores to equivalent reading levels is based not only on research but on practical experience. For my purpose, that of establishing reading ability groups in relation to the reading of a specific book, the criteria must relate to the needs of the teachers who use them. It is better that only the very able students are grouped as "independent" readers: they will be expected to cope with difficult assignments without teacher assistance

on the basis of the test results. Teachers tend to overestimate the reading abilities of their students. Limiting the number of independent readers allows for this.

By counting the first two responses which have already been inserted as an example, the student gains 4%. This, then, decreases the required levels for percentages by 4%, making Independent Level 56% and above: Instructional Level 36% to 54% and Frustration Level below 36%. These levels work very well when testing for "goodness of fit": that is, in matching a particular book with a particular student.

Synonyms

Research indicates that there is very little difference in rank results when synonymic scores are compared with verbatim scores. Better readers tend to score slightly higher in relation to poorer readers when synonyms are counted. (Elley, 1976) This is a contentious issue, about which many teachers will argue: but for the purpose of this test, use verbatim responses only.

In Elley's investigation, two cloze tests were administered to 50 thirteen year-olds, in General Science and in English grammar. The following table shows that the correlation between results for exact replacements only and for exact replacements plus synonyms, was 0.98 in one case and 0.95 in the other. Most pupils increased their mark by the same amount, about 5%.

Table 2

Cloze Test marking for exact replacement vs synonyms

N - 50

	Science Passage		Grammar Passage	
	Exact Replacement	Synonym	Exact Replacement	Synonym
Mean	16.00	19.35	14.18	15.73
S.D.	6.49	7.65	4.53	4.84
Correlation	0.98		0.95	

It takes twice as long to mark for synonyms, and probably reduces the reliability where there are doubtful cases, which is a good reason not to do so. However, the teacher can learn much about a student's language ability from the nature of the synonyms used e.g. a low mark may occasionally be the result of using very good synonyms: the student has an excellent vocabulary, but has not become aware of the author's style of writing. This is a case where the teacher's professional judgement supersedes a test result.

In the classroom setting, you may wish to give the papers back to the children to discuss the answers. As they are unlikely to understand the validity of research evidence, perhaps they could make a second assessment, giving some credit for synonyms.

Clozentropy

"A count of items that are consistent in frequency and meaning with the responses of other members of the particular reading population can provide teachers with valuable inform-

ation as to how students can or cannot determine the author's message because of the factors within their common linguistic or informational experiences."(Hittelman, 1978) i.e. a word is correct to the degree that the members of the criterion group agree it is correct. For example: In a Home Economics text book one of the words deleted is the noun "cooker". Children in our country (New Zealand) would use the word "oven" to replace that word in a cloze test because we seldom use the word "cooker". "Oven", therefore is an acceptable synonym, because of general usage.

Using the Cloze Tests

At the beginning of the school year, I run Cloze Tests with all new entrants to High School, using the Social Studies book each class has for their first topic. Because the tests are informal, they can be administered in the first week of school without causing new entrants distress. Thus, before standardized test results or even elementary school record cards are available, subject teachers know of possible groups, students who may have reading difficulties, and the more able students. As Reading Teacher, I have an early indication of probable slow-progress pupils and can begin individual testing. The subject teachers mark the tests, so that they may learn first-hand of their pupils' abilities and difficulties in the use of vocabulary, context, grammar and inferential skills.

Cloze tests are given on request in any subject (excluding mathematics). The effect has been far-reaching and has led to a great awareness of the difficulty level of text and resource books.

Conclusion

Our judgement as to what is readable should be relative to a particular instructional situation. We must not rely entirely on arbitary means for classifying instructional materials, but use them only as guidelines. If we understand the reading process, we know how vital to comprehension is the knowledge the reader brings to the print. The Standard Cloze Test, properly constructed, administered and scored, gives an insight into the reader's understanding and ability, and to what will, or will not be suitable instructional material for a specific purpose. We must never exclude the reader and the act of reading from our concept of readability.

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APPENDIX 1

Sample Test Paper: extracts from Atoll"

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1. STORM

Hale sat in his radio station on Fakaofo, listening intently to the morse signals from his radio receiver, and scribbling rapidly on his message pad. It was mid-morning.

The concrete building was small, with ___a___ corrugated iron roof and wide eaves _____3 give protection against sudden heavy downpours _____4 rain. The words 'Radio Station' were printed in _____5 black letters on the white barge _____6 above the door which led into _____7 single room where Hale worked. The transmitter-receiver _____8 stood on a table against one _____9 of the room. Pandanus mats covered _____10 floor, and a low bench against _____11 wall opposite the table completed the _____12. Hale's wife, Malia, had decorated the walls with _____13 rope of small shells, threaded on _____14 fibre and looped along near the _____15, caught at each wooden rafter by _____16 drawing pin from the box on Hale's _____17 left behind by a visiting European official.

Hale _____18 listening and writing, rose from his _____19 and walked out of the building. _____20 looked first at the sky and _____21 at the lagoon; for the radio _____22 relayed to him from Mulinu'u, the meteorological _____23 in Western Samoa, had contained ominous news. Fakaofo and _____24 other atolls of the Tokelau group lay _____25 the path of a hurricane. It was travelling rapidly southwards, and would also strike

Appendix 1 - continued

Western Samoa unless its course changed.

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2. A DAY ON FAKAOFO

Fetalaino was on his way to school. It _____1, a short journey, though longer than _____2 was used to. Always in the _____3 he and his relations and friends _____4 attended the school in Fakaofo village itself. _____5 building was thatched over a timber _____6 in the traditional open style; but _____7, with assistance from New Zealand, a new school _____8 been erected on the nearby islet _____9 Fenua Faia, 'The Place of the Pandanus'. It was built _____10 timber and concrete and today, Monday, was _____11 beginning of the second week of _____12 it. It was necessary for the _____13 to cross the reef to get _____14 it and, while this morning the _____15 was out and they barely wet _____16 feet, Fetalaino knew that occasionally they would _____17 to go by canoe, and the _____18 pleased him. A lot of time _____19 be spent in a canoe....

His _____20 returned with a jerk to the _____21 as he noticed the European education officer _____22 at the door of the new _____23 talking to Tominike, the Tokelau teacher of his _____24 class. Fetalaino had first seen the education _____25 a few days before when he and his wife arrived by the Aonui. His name was 'Mr Edwards', but soon, when they got to know him better, they would probably be able to drop the 'Mr' and express his name in its Tokelau form as 'Etuati'.

Appendix 2

STORM

Hale sat in his radio station on Fakaofo, listening intently to the morse signals from his radio receiver, and scribbling rapidly on his message pad. It was mid-morning.

The concrete building was small, with a corrugated iron roof and wide eaves TO give protection against sudden heavy downpours OF rain. The words 'Radio Station' were printed in LARGE black letters on the white barge BOARD above the door which led into THE single room where Hale worked. The transmitter-receiver SET stood on a table against one WALL of the room. Pandanus mats covered THE floor, and a low bench against THE wall opposite the table completed the FURNITURE. Hale's wife, Malia, had decorated the walls with A rope of small shells, threaded on COCONUT fibre and looped along near the CEILING, caught at each wooden rafter by A drawing pin from the box on Hale's TABLE, left behind by a visiting European official.

Hale FINISHED listening and writing, rose from his CHAIR and walked out of the building. HE looked first at the sky and THEN at the lagoon; for the radio MESSAGE relayed to him from Mulinu'u, the meteorological STATION in Western Samoa, had contained ominous news. Fakaofo and THE other atolls of the Tokelau group lay IN the path of a hurricane. It was travelling rapidly southwards, and would also strike Western Samoa unless its course changed.

(Total nouns-excluding proper nouns-..49
Number deleted..... ...10 -ratio 5:1)

Appendix 3

CLOZE PRACTICE SHEET (ORAL)

Two Boys on a Mountain

Explanation: Two boys have climbed 600 feet up a cliff face. They are standing on a three inch wide ledge. Doug decides to jump up to get a grip on a ledge higher up.

The fearful waiting was over at once...for there was Doug, hanging from the wide, safe ledge. There was no _____ for his feet; he _____ have to pull himself _____ by his arms alone. _____ body went slowly up _____ if pulled by some _____ power. A moment later _____ was standing on the _____. "Nothing to it," he _____, and laughed.